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REPORT TO THE CONGRESS



BY THE COMPTROLLER GENERAL
OF THE UNITED STATES



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GENERAL ACCOUNTING OFFICE
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Improvements Needed In The Navy's Fleet Modernization Program

Departments of Defense and Navy

This report points out opportunities for the Navy to improve its program for ship alterations.

Also, it provides recommendations to improve the effectiveness of the Navy's ship alteration management information system.

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

— Encls 44641

This report points out opportunities for the Navy to improve its program for scheduling ship alterations.

This review was made because of the strong congressional interest in the Navy's management of alterations, requirements, costs implementations, etc. In a previous review of the Navy's management of ship overhaul and repair programs, we noted that many programmed alterations were not accomplished due in part to ship overhaul deferrals. The report did not analyze in detail the impact unaccomplished alterations had on the Navy's fleet modernization program. Therefore we made this review to measure the causes and effects unaccomplished alterations had on the fleet modernization program.

We evaluated the effectiveness of the Navy's fleet modernization program which upgrades the capabilities of ships by installing alterations. Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Director, Office of Management and Budget; the Secretary of Defense; and the Secretary of the Navy.

James B. Stacks
Comptroller General
of the United States

C o n t e n t s

		<u>Page</u>
DIGEST		i
CHAPTER		
1	INTRODUCTION	1
	How alterations are developed	1
	Approach to the review	4
2	NEED TO DETERMINE SCOPE OF OUTSTANDING ALTERATIONS	5
	Need to determine alteration backlogs	5
	Need to match procurements with installation funds	6
	Need to improve visibility of alteration material	7
	Need to monitor program direct material accounts	8
	Conclusions	10
	Recommendations	11
	Navy comments	11
3	IMPROVEMENTS NEEDED IN THE AUTOMATED SHIP ALTERATION MANAGEMENT INFORMATION SYSTEM	12
	Purposes of SAMIS	12
	Principal users of SAMIS	13
	Chief of Naval Operations	13
	Ship logistics managers	13
	Material managers	13
	Problems with SAMIS and use of other data systems	14
	Problems associated with SAMIS	15
	Conclusions	17
	Recommendations	18
	Navy comments	18
4	NEED TO STABILIZE THE PROGRAM AND TO IMPROVE STANDARDIZATION	20
	Better monitorship needed	20
	Nonavailability of material	22
	Canceled because alterations were previously installed	23
	Navy testing integrated alteration package for surface ships	23
	Conclusions	24
	Recommendations	25
	Navy comments	25

CHAPTER		<u>Page</u>
5	WORK THAT POTENTIALLY COULD BE PERFORMED AT A LOWER MAINTENANCE LEVEL	26
	Long Beach Naval Shipyard	27
	Ship alteration and repair package	28
	Onboard equipment not adequately maintained	30
	Plans to improve intermediate maintenance support	31
	Conclusions	34
	Recommendations	34
	Navy comments	35

APPENDIX

I	Letter dated December 30, 1975, from the Special Assistant to the Assistant Secretary of the Navy (Installations and Logistics)	36
II	Principal officials of the Department of the Navy responsible for activities discussed in this report	40

ABBREVIATIONS

AMT	amalgamated military/technical improvement plan
FMP	fleet modernization program
GAO	General Accounting Office
SAMIS	Ship Alteration Management Information System
SARP	ship alteration and repair package

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

IMPROVEMENTS NEEDED IN
THE NAVY'S FLEET
MODERNIZATION PROGRAM
Departments of Defense
and Navy

Background on page 4.

D I G E S T

The fleet modernization program upgrades the capabilities of ships in the fleet by installing alterations. It provides the dollars to install equipment through the operations and maintenance-Navy fund. Major equipment is procured by the other procurement-Navy fund but this is not shown in the program. The following are the fleet modernization program budgets.

<u>Fiscal year</u>	<u>Amount</u> (millions)
1974	\$395.5
1975	461
1976 (note a)	628
1977	711

a/(program objective memorandum)

AREAS FOR IMPROVEMENT

Planning and coordination

The Navy does not have a configuration management system to show the completed and outstanding alterations for each ship. Consequently, it cannot readily determine the amount of alteration work outstanding. (See p. 5.)

Through the fiscal year 1976 program, the amount of money necessary to install alterations in future years was not determined. Lacking firm installation cost data, equipment procurements were made without considering necessary installation funds; consequently, equipment became available but funds to install them were insufficient. The Navy plans to match procurements with installation costs in future years, starting with the 1977 program. (See p. 6.)

Asset visibility and control

The Navy is unable to determine from its on-hand inventory records which items were purchased for the fleet modernization program. It said a time-consuming review would be needed to make this determination. Of the 5,500 line items managed by the Naval Sea Systems Command, GAO selected the 10 highest dollar valued items on hand and found that 3 of the 10 line items valued at about \$859,000 were required in the program but were not scheduled for installation. Without complete information on on-hand inventories of alteration material, the Navy could not determine

- the status of its modernization program, relative to outstanding alterations to be installed, and its impact on future procurements and
- whether to program the equipment for installation or use it for other programs. (See p. 7.)

Management information system

Navy's computerized system is the data base for planning and programing ship alterations, but it is not fully effective because:

- Customers using the system--Chief of Naval Operations, ship logistics managers, and material managers--lack confidence in the system. (See p. 12.)
- 50 percent of the customers--carrier and submarine fleets--rely on other data systems that are mostly duplicative. (See p. 14.)
- Customers are not making concerted efforts to improve the system to make it work. (See p. 17.)
- Full capability of the system is not used. Computer terminals are located with customers, but the customers are prevented from going on line to make data base changes. They use manual routines which create errors and are time consuming. (See p. 17.)

Use of maintenance work capability
below shipyard (depot levels)

Shipyards are doing maintenance work that could be done by ships' forces or intermediate levels. (See p. 26.)

RECOMMENDATIONS

The Secretary of the Navy should insure that the Navy:

- Purify the data base in the automated management information system and use it.
- Develop and submit backup data which would relate the planned installation costs to the annual procurement requests.
- Establish controls over the inventory on hand and relate the inventory to alterations to be installed, thereby forming a basis for future alteration scheduling and for additional procurements.
- Use more fully the alteration capability and capacity that exists below the shipyard level.

Other recommendations can be found on pages 11, 18, 25, and 35.

AGENCY COMMENTS

The Navy concurred with GAO's recommendations and reported actions taken or planned. The Navy's comments are found in appendix I and have been incorporated where applicable within each chapter of this report.

CHAPTER 1

INTRODUCTION

The fleet modernization program (FMP) is managed and controlled by the Deputy Chief of Naval Operations (Logistics), Ships Readiness Division. The day-to-day execution responsibility is assigned to the Naval Sea Systems Command which acts as executive agent for the Chief of Naval Material. As executive agent, the Naval Sea Systems Command participates with the Chief of Naval Operations in (1) evaluating the technical feasibility of an alteration, (2) determining its priority, (3) developing the detailed alteration drawings, (4) budgeting for and obtaining the necessary material, and (5) scheduling the alteration within ships overhaul schedules, shipyard capacity, material availability, and funds limitations.

The basic objective of FMP is to plan, program, budget, and install improvements to ships of the active fleet. To install these improvements requires depot-level capability. Generally, alterations are programmed to (1) correct existing equipment deficiencies, (2) improve equipment performance, (3) provide new equipment, and (4) comply with legal requirements. FMP encompasses two major functions: buying material and installing it. It is important to match material availability with the installation date. FMP funds support the installation costs, procurement of initial spare parts support, and alteration design work which is financed through the operations and maintenance-Navy fund. Other procurement-Navy fund purchases major primary and support material.

Operations and maintenance-Navy funds allocated to FMP

<u>Fiscal year</u>	<u>Amount</u> (millions)
1974	\$395.5
1975	461
1976 (note a)	628
1977	711

^aProgram objective memorandum.

HOW ALTERATIONS ARE DEVELOPED

Ideas for alterations may come from many sources-- individuals, fleets, industry, or in-house research and development. Alterations are categorized as either technical or military improvements. Technical alterations improve a

system's reliability, maintainability, and safety or effectiveness and are managed and approved by the Naval Sea Systems Command. Military alterations are more complex; they improve the military characteristics of a ship and are approved and managed by the Chief of Naval Operations.

When suggesting a change to a ship's military characteristic, a proposed military improvement form must be submitted to the Chief of Naval Operations for initial review. This form gives the Chief of Naval Operations a description of the improvement and data relating to the ship's mission area, system effectiveness, power requirements, development status, cost, manpower and training effects, and applicable ship classes. If insufficient data for approval is provided, which is generally the case, the proposed improvement is directed to the Naval Sea Systems Command which conducts a cost and feasibility study, including the impact affecting the ships parameters (displacement, vertical movement, power consumption, etc.).

Upon approval, proposed technical and military plans are listed in order of priority for each ship type or class. A semiannual fleet modernization conference is conducted and attended by representatives of the fleet and type commands;¹ naval systems commands; Chief of Naval Operations; and hull, mission, and equipment sponsors. Final priorities are established and grouped to form the amalgamated military/technical improvement plan (AMT). Listing a proposed improvement in the AMT constitutes authority to expend class planning funds for installation studies. Items are listed in AMT without regard to material availability or cost. These factors are considered, however, in developing FMP.

By using the AMT priority listing, alterations are selected for individual ship hulls to formulate the programmed section of FMP. Since more alterations are listed in the AMT than can be done in a given overhaul period, the alterations are grouped for each scheduled overhaul on the basis of a realistic work package, using industrial manpower skills, fiscal constraints, shipyard capacity, overhaul length, and

¹Type commanders are under the management of the Commanders in Chief of the Atlantic and Pacific fleets. There are type commanders for (1) submarines, (2) aircraft carriers, (3) combatants, and (4) auxiliary and amphibious ships. They are the administrators of their particular class of ship and are responsible for insuring ships' material and personnel readiness.

material procurement leadtimes. The alterations selected are considered programed alterations regardless of the fiscal year scheduled for accomplishment. The remaining alterations are listed separately in the unprogramed section of FMP.

An alteration in the programed section of FMP authorizes managers to purchase needed materials. An alteration listed in the unprogramed section of FMP does not authorize managers to purchase materials.

Detailed shipyard plans are authorized to be developed on the basis of an authorization letter developed from FMP. Generally, an authorization letter is submitted to the shipyard by the Naval Sea Systems Command 180 or 240 days before a ship's overhaul schedule; in some cases the letter may precede the start of the overhaul by a year.

The Ship Alteration Management Information System (SAMIS) within the Naval Sea Systems Command provides automated tracking of the alterations. It is the Navy's official system which serves as the central repository for essential FMP information. The data base of SAMIS contains

- alteration schedules by individual hull member,
- material requirements and availability, and
- estimated installation and material costs.

To be effective, the SAMIS data bank must be continually updated.

There are three types of ship alterations--title D, F, and K. Title D alterations are equivalent to a repair. Authorization may only be given by the type commanders who fund these alterations through fleet operation and maintenance--Navy operating expense funds. These alterations usually require industrial (shipyard) support, although in certain cases they may be installed by ships' tenders. Title F alterations are also authorized and funded by type commanders. They require no industrial support or special program material and are accomplished by ships' forces. All other alterations are title K. Navy shipyards design and install the programed title K alterations, but they have practically no administrative responsibilities in FMP. Shipyards make recommendations to the Naval Sea Systems Command about the scheduling of ships and the balancing of plant capacity to workload. The shipyards' responsibilities are to install alterations as directed and which are funded by the Naval Sea Systems Command or the type commanders.

Fleet modernization program

(B) APPROACH TO THE REVIEW

We reviewed the Navy's FMP to determine the (1) adequacy of budgeting and funding policies, (2) extent that funded alterations were done, the justifications for deferring alterations, and the degree that work was backlogged for unaccomplished alterations, (3) disposition of funds from unaccomplished or deferred alterations, (4) amount of visibility of alteration material, and (5) coordination of procured material with available installation funds.

We analyzed pertinent documentation at the Norfolk and Long Beach Naval Shipyards, Naval Sea Systems Command, and the Office of the Chief of Naval Operations.

We discussed our findings with responsible officials at the Naval Sea Systems Command and with the Chief of Naval Operations.

CHAPTER 2

NEED TO DETERMINE SCOPE OF OUTSTANDING ALTERATIONS

The Navy does not have a configuration status accounting system to show the completed and outstanding alterations for each ship. Also, the Navy cannot determine the amount and disposition of material for the alterations because it lacks needed information. As a result, the Navy cannot accurately plan and program future alterations and purchase the needed materials.

In its report "Management of Aircraft Modification Programs in the Army, Navy, and Air Force" dated October 1, 1974, GAO indicated that the Navy maintains a configuration status accounting system for managing aircraft modifications. The system identifies the completed and outstanding modifications; it enables the Navy to determine the amount of backlogged work and the amount of material on hand so that plans and programs can be developed within workload capabilities. The Navy's aircraft modification backlog, which had been high, has been recently brought to a more controllable level.

NEED TO DETERMINE ALTERATION BACKLOGS

FMP's system does not disclose work backlogs; consequently, the Navy cannot readily determine how many new alterations should be programmed within fiscal and shipyard capacity constraints. Alterations that are deferred during a ship's scheduled overhaul are reinstated into the AMT where they compete with other deferred and new alterations for priority assignment. Alteration priorities are established in AMT during the fleet modernization conferences. Deferred alterations, therefore, are not necessarily assigned high priorities. If an alteration's priority is low and below the AMT fiscal cutoff point, it will not be scheduled in the next overhaul cycle. Alterations falling below the cutoff point still retain their requirement but are scheduled in the unprogramed section of FMP. Generally, alterations that were deferred had the necessary equipment and material for their installation on hand. We asked the Navy to give us a list of material on hand associated with unprogramed alterations. Because the information was not readily available, it was necessary for them to program a special computer run. We noted a large inventory related to unprogramed alterations, indicating premature investment in such equipment. We did not, however, quantify the inventory and the associated dollars because the Navy was in the process of evaluating the accuracy and completeness of the special run. The Navy later told us

that the SAMIS data was not reliable to determine the value of material on hand for unprogramed alterations. The Navy did, however, randomly select 30 line items from a universe of about 650 line items and manually reviewed the latest on hand/on order assets related to programed/unprogramed alterations. Of the 30 items, 14 items had assets on hand/on order valued at \$883,000 for unprogramed alterations.

In effect, the Navy employs AMT as a pool or reservoir from which to draw alterations. It does not divide the scope of deferred alterations in AMT as either outstanding or backlogged work. The Congress has expressed concern that the military departments have been programing new aircraft modifications while a large backlog of work exists. The Navy stated that all FMP alterations listed in AMT constitute a valid requirement, but they are prevented from programing every alteration into FMP because of fiscal and shipyard capacity constraints. Nevertheless, the problem is that the Navy is programing new alterations without considering the extent to which deferred alterations, for which material procurements already have been made, are outstanding.

The Navy should establish accountability for the amount of alterations funded but outstanding and relate this to the amount of newly programed alteration work. The configuration status accounting system used for aircraft modifications should serve as a helpful guide.

NEED TO MATCH PROCUREMENTS WITH INSTALLATION FUNDS

The Navy did not effectively develop the planning of future installation budgets, which are used as a guide to program procurement actions, for the fiscal years 1974-76 FMPs. Even though the Navy policy stated that items should not have been purchased unless they were programed in the FMP, procurements were authorized by the Chief of Naval Operations without regard to whether the funds were available to install the equipment. The equipment for the following systems was procured without being programed in FMP.

- Light airborne multipurpose system (LAMPS).
- Harpoon missile.
- Pollution abatement.
- Fleet satellite communications system.
- Versatile avionics shop-test (VAST).

--Basic point defense missile system.

--Boiler system (1200 PSI System).

--NIXIE Sonar System.

In effect, installation funds could not match the rate of procurements. Consequently, other programmed alterations were canceled or deferred that had procurement actions already initiated in order to program these particular alterations in FMP.

Considerable improvements were made in developing the program objective memorandum for the 1977 program: (1) ship sheets and cost estimates were developed for each ship scheduled for future alteration and (2) constraints were placed on future procurements.

The Naval Sea Systems Command was tasked to develop accurate staff-day rates for each shipyard and to obtain incidental material costs associated with the alterations. Ship sheets were developed for each ship and provided prices and the total costs for the alteration packages. The sheets are designed in part to give Navy ship logistics managers a vehicle whereby staff-days, staff-day costs, and incidental material costs may be reviewed and updated. Staff-days and incidental material costs are developed by ship logistics managers in conjunction with the scope of the alterations. The scope includes a detailed engineering description of the alteration, estimates of staff-days and material costs, and a list of Government-furnished material to be given to the shipyard. The cost estimates are refined as more detailed planning is accomplished and actual costs are substituted for estimates when they become available.

In contrast to previous programs, the Navy, for the first time, will give future years the same degree of planning as the budget year. Each of the future years will have installation cost estimates which will constrain procurements.

NEED TO IMPROVE VISIBILITY
OF ALTERATION MATERIAL

In July 1974, at the direction of the Chief of Naval Material, the Uniform Inventory Control Point System was carried out by the Naval Sea Systems Command. An automated system designed to aid in the material management function, this system has not satisfied all of the Naval Sea Systems Command's needs. A major part of the Naval Sea Systems Command inventory control is procuring program material with

specifically designated funds to satisfy FMP requirements. Material procured for these programs must be recognized and accounted for when received, stored, and issued to eventual end use.

We requested the Naval Sea Systems Command to provide and identify equipment procured for ship alterations for us to determine the disposition of the material. We were told that the inventory control point system procedures do not provide the flexibility whereby material procured for FMP can be taken into stock in a separate purpose code account.

The Naval Sea Systems Command manages about 5,500 line items. These items may have been procured to support various programs--shore facilities, other military departments, foreign sales, maintenance float levels, ship alterations, etc. The items associated with these programs are collectively included in the supply records under the other procurement-Navy account. Equipment is not divided by program. To obtain an inventory of FMP-related items, we were told that a supply demand review would be required for each line item. The review would require extensive staff-days and would be extremely disruptive to the Navy's daily operations.

We obtained a list of the 10 highest dollar value items of the 5,500 line items currently in the Naval Sea Systems Command inventory and the disposition of these items. We found that of the 10 line items valued at \$3.3 million, 3 line items valued at \$859,000 had a requirement but, the priority was too low to be programmed for planning in the current or future years of FMP. We were told that these items were not programmed because of fiscal constraints. After our review the Navy told us that the 3 line items were programmed for installation.

If an item is not programmed in FMP, it will not be incorporated into the SAMIS data base. Because fleet modernization conferees use the SAMIS data for information on material availability for alterations, the 3 line items, although included in the inventory control point system but not specifically identified as FMP-related material, would not be visible to the conferees. Maintaining visibility of all FMP-related items would help in planning and programming alterations.

NEED TO MONITOR PROGRAM
DIRECT MATERIAL ACCOUNTS

The Long Beach, California, and Norfolk, Virginia, naval shipyards are retaining material for which there is no apparent

need. NAVSEA Instruction 7600.62 states that material excess to currently funded job orders may be retained in a program direct material account if there is reason to expect that the material will be used within 18 months. If no apparent need exists for the items, the shipyards are required to submit a list of excess materials to the cognizant inventory control points for interrogation. Inventory control managers will notify the shipyard to do one of the following:

- Return to supply for credit.
- Return to supply without credit.
- Dispose of the items locally.

The Long Beach Naval Shipyard established its program direct material account in August 1973. Subsequently, direct material inventory long leadtime material, and restoration program material were transferred from Hunter's Point Naval Shipyard, San Francisco, California, and added to the account.

As of January 30, 1975, the program direct material account consisted of about 6,000 line items with a value of about \$2.8 million. The material is being retained for possible use in future shipyard repair, alteration, and restoration.

Our review of the program direct material account showed that no issues were made on more than 4,400 stock numbers valued at \$1.64 million since entering the account. However, the shipyard has no system to identify program direct material for which there has been little or no use. Also, a review has not been made to determine the need for the material.

As a result of our review, shipyard officials submitted a list of unreserved program direct material to the Naval Supply Center, San Diego, for screening. The Center identified a need for \$853,000 worth of items.

The Norfolk Naval Shipyard program direct material account was established at the shipyard in January 1974. As of April 3, 1974, there were 114,830 items, valued at \$1.27 million. Of a statistical sample of 315 randomly selected items over 18 months old, we found 161 items, or 51 percent, had no issues. Between April 3 and October 16, 1975, the shipyard returned \$120,000 worth of items to supply for credit and \$197,000 worth for no credit or to be disposed of.

Supply officials selectively review the unreserved items and interrogate the supply system to determine whether any

requirements exist. We found, however, that a comprehensive review of the program direct material account was not made periodically.

At our request the Norfolk Naval Shipyard agreed to submit a list of all items in the program direct material account to the inventory control point at the Ships Parts Control Center, Mechanicsburg, Pennsylvania, to determine the extent to which related items could be returned to the supply system. The Center subsequently told us that the tape (list) submitted was not compatible to their automatic data processing hardware. To match the shipyard's list against the tape, the shipyard would have to key punch individual cards for each item. Because of the extensive work involved, we did not ask the shipyard to key punch the cards.

We were told on December 5, 1975, that the program direct material accounts at shipyards were being disestablished. Shipyards have been directed to return excess materials to the supply system and to transfer those items still required to other naval industrial fund inventory accounts.

CONCLUSIONS

The Navy should improve its control over unaccomplished alterations to insure that the backlog is at a manageable level. We believe that information on the backlog is essential to determine whether to program new or additional alterations. Also, the Navy should know the amount of alteration material in its inventory. With this information, the Navy could better evaluate the inventory during the fleet modernization conferences. The Navy should carefully evaluate the entire backlog of material and determine whether additional expenditures to purchase more is justified. The Navy needs to be sure that these alterations are important enough to warrant the additional installation expenses.

The Navy needs to prepare installation schedules as back-up data to relate their annual procurement fund requests with planned installations not only to project the estimated cost of installations but to assure that the capability to install them exists. This data would permit better evaluation of alteration fund requests.

The Long Beach and Norfolk naval shipyards had inventories which they did not have a reasonable expectation to use. The Long Beach Naval Shipyard has taken action to return excess items to the supply system. The Navy has disestablished the program direct material accounts at naval shipyards and has requested that excess materials be returned to the supply system.

We believe that good inventory control of material requires periodic assessment of requirements. Items no longer needed should be returned to the inventory manager to

- fulfill the needs of others,
- prevent purchasing similar items to meet stock level requirements, and
- reduce shipyards' material administrative and handling costs.

RECOMMENDATIONS

We recommend that the Secretary of the Navy provide the necessary guidance and insure that the Navy:

- Develops and submits budget backup data which would relate the planned installation costs to the annual procurement requests.
- Establishes controls over the inventory on hand and relates the inventory to alterations to be installed, thereby forming a basis for future alteration scheduling and for additional procurements.

We recommend that the Chief of Naval Operations insure that shipyards return excess materials to the supply system inventory.

NAVY COMMENTS

The Navy agreed to develop and submit budget backup data which would relate the planned installations to the annual procurement request by July 1976.

The recommendation regarding inventory control was accepted. The Navy stated, however, that they would consider the relative need for the alteration on the basis of their AMT priorities. We agree that the Navy should consider the relative priority of an alteration but feel that, with better visibility of the inventory on hand, the Navy should also consider its inventory in programming future alterations.

The Navy concurred that the shipyards should return excess material to the supply system inventory.

CHAPTER 3

IMPROVEMENTS NEEDED IN THE AUTOMATED SHIP ALTERATION MANAGEMENT INFORMATION SYSTEM

To effectively manage FMP, an automated information system has been developed to serve those Navy organizations with principal responsibilities for the program--the Chief of Naval Operations, the ship logistics managers of the Naval Sea Systems Command and the various material managers. The data system, SAMIS, is intended to efficiently provide these principal users with the information needed to control and manage the program.

SAMIS is not working efficiently. Because of their lack of confidence in the integrity of the information generated by SAMIS, the principal users have developed alternate manual and automatic data systems. These alternate systems are resulting in increased costs and are duplicating the purposes which were intended to be satisfied by SAMIS.

PURPOSES OF SAMIS

FMP is an extensive, fluid program which requires a responsive, reliable data base to insure adequate management. SAMIS is the information system that was developed to achieve this purpose and is the operational responsibility of the FMP Management Division of the Naval Sea Systems Command. SAMIS, in existence since the early 1960s, was redesigned in late 1973 to improve service. Users of the redesigned system are given, or will be provided with, remote computer terminals to provide near real-time access to the information stored in the system.

The SAMIS data base is housed, operated, and maintained by the Naval Material Command Support Activity, Arlington, Virginia. Five vital data areas are included in the inter-related modules of the SAMIS data bank.

- Hull data--on individual ships.
- Overhaul data--on scheduling of ship overhauls.
- Material data--on material cost, procurement plans, and scheduled availability.
- Improvement program data--on structure and priority of the FMP.
- Alteration data--on individual alterations.

SAMIS users provide information on program changes to the FMP Management Division of the Naval Sea System Command for central processing and computer input. The raw data is collected by the group and sent to a private contractor for conversion to a format suitable for keypunching. The Naval Material Command Support Activity further processes the information and enters it into the data bank when received from the contractor.

PRINCIPAL USERS OF SAMIS

The principal users of SAMIS are also the major providers of information to the data system. The Chief of Naval Operations has primary responsibility for FMP and is the principal user of SAMIS and its products. The other principal users and providers of data are the ship logistics managers for submarines, aircraft carriers, combatant ships, and amphibious and auxiliary ships and the various material managers. These principal users are interdependent upon each other for information and the actions taken by one user will affect the others.

Chief of Naval Operations

The Chief of Naval Operations maintains the 5-year FMP and specifically puts alteration priorities and overhaul schedule data into SAMIS. Since this office must constantly deal with operational and technical considerations of the fleet, alteration and overhaul priorities are subject to continual change and revision and involve a highly dynamic process.

Ship logistics managers

Ship logistics managers perform a vital role in the accomplishment of the FMP program. Once a ship alteration program has been established by the Chief of Naval Operations, the logistics managers develop the needed alteration design data and identify the material required for the alteration. In particular, each logistics manager identifies all special program material and long leadtime material involved in alterations on his ships. Effective management of FMP is based on identifying material needs early in the alteration development process to permit material procurement activities to plan, program, budget for, and procure the needed items.

Material managers

Material managers depend on SAMIS for information needed to procure the necessary material to support fleet modernization. As material needs are identified, material managers plan,

program, budget, procure, control, and distribute material under their cognizance to meet the time-phased requirements listings for each programmed FMP alteration. Material managers also provide material availability information on an item basis, actual and projected, to support each programmed alteration.

The accuracy and timeliness of data in the system are dependent principally upon the data sources as well as the prompt processing of the data by the FMP Management Division so that critical and vital information can be exchanged and used by those with principal responsibilities for FMP.

PROBLEMS WITH SAMIS AND USE OF OTHER DATA SYSTEMS

Although SAMIS has been operational for an extended period of time, primary users are not relying on its information.

Users expressed a lack of confidence in the integrity of the data base and, specifically, on the accuracy and timeliness of the data being produced. To overcome their lack of confidence in SAMIS, principal users have developed alternate systems to provide them with needed management information.

Specifically, our discussions with a number of principal users showed that:

- Officials of the Office of the Chief of Naval Operations, for whom the system is primarily designed to serve, expressed a total lack of confidence in the system. These officials said that difficulties have been experienced in getting data changes introduced, ship alteration entries do not appear in output documents, and the system's information tends to be unreliable. To overcome these problems, officials of the Office of the Chief of Naval Operations said they keep extensive manual records which they need to manage and control the program.
- Officials of the Carrier Ship Logistics Division said they have established a separate system to provide needed information. The Carrier Division's data system provides information on individual ship alterations, the status of material availability and, among other things, the priority of ship alterations. These officials said this alternate system, which rents computer time from another Navy facility, has been operational for about 5 years.

--The submarine logistics manager, responsible for the life-cycle management of the submarine fleet, relies on a private contractor for data processing support for FMP management decisions. The Submarine Logistics Division contract duplicates, in part, certain information intended to be provided by SAMIS. Specifically, this information includes data on the ship alteration status summaries, alteration material management summaries, and ship alteration planning documents. A division official estimated \$250,000 of the total contract price for fiscal year 1976 represented the costs of obtaining the data that should be provided through SAMIS.

Although the other two ship logistics managers--for combatant ships and amphibious/auxiliary ships--do not use outside data processing support as a substitute for SAMIS, we found that detailed records are manually maintained to purify SAMIS data. Although each manager has access to an on-line SAMIS terminal, redundant, manual records are still being maintained because of inaccurate SAMIS data. We did not attempt to identify the costs associated with the preparation and maintenance of these redundant manual records.

Problems associated with SAMIS

The users' view that SAMIS was not providing reliable data was found to be basically correct. Numerous instances were noted where the data being generated was either untimely, inaccurate, incomplete, or a combination of these deficiencies. For example, one case showed that, because of FMP Management Division personnel misinterpreting input data, a total of 20 ship alterations were completely dropped from FMP when the alterations were intended to be eliminated for only the fiscal year 1980 program. In another example, a SAMIS report showed alterations programed in the wrong fiscal year for 15 of 36 ships. A third example showed that a Chief of Naval Operations message changing the overhaul dates for three ships took 18 days to be entered into SAMIS.

Another example demonstrates the grossly inaccurate material requirements of FMP as shown by the SAMIS data bank. In January 1975 the Materiel Planning and Programming Division, Naval Sea Systems Command, queried the ship logistics managers on their existing material requirements under the ship alteration program, for which the Naval Sea Systems Command had management responsibility. A comparison of three of the four ship logistics managers' information with that contained in the data bank showed that SAMIS had included about \$20

million worth of invalid material requirements and excluded about \$20 million worth of valid material needs.

SAMIS' inaccuracies in material requirements are attributable to the failure of the ship logistics managers to provide updated information needed to keep the data in the system current. Although the Naval Sea Systems Command query demonstrated the inaccuracy of material data in SAMIS, it must be noted that this data is normally purified manually before any large material transaction is initiated, thus the condition does not necessarily adversely affect the material procurement process. However, it is important to recognize that much of the labor-intensive and time-consuming purification process could be eliminated if the SAMIS data base was maintained properly.

We requested information on the status of material to support the programmed FMP. One SAMIS report is formatted to provide this information by cognizant material managers. Officials were unable to provide accurate information because certain data elements had not been properly completed by some material managers. We were told that efforts are presently underway to establish better reporting discipline.

In discussions with Sea Systems Command officials, we learned that material requirements to support FMP were communicated to the material managers every 4 months by a SAMIS material status report. The report is not designed to specifically identify changes, but rather to incorporate all changes within the report. The material managers are thus required to examine every line item to determine which changes have been made since the previous report. We were also told that this constitutes the formal notification to the material managers of program changes which affect the procurement process.

In our analysis of the shortcoming of SAMIS, we found that:

1. Inadequate coordination existed between the principal users of SAMIS and the FMP Management Division. Some SAMIS products were not adequate for the users' needs.
2. No standard procedures had been developed for communicating program changes. The FMP Management Division received data in many different formats. We believe data was often misinterpreted as a result. The Naval Sea Systems Command, however, has been developing standard procedures for communicating program changes to SAMIS and is in the final states of preparation.

3. Generally, there was little verification by FMP Management Division of the accuracy of data changes which they process. One official said there was no specific requirement to verify the accuracy of the information entered into the data bank. This official also said that much of the data was misinterpreted and subsequently had to be corrected.

Although we found numerous examples of errors and delays attributable to inefficient data handling by the FMP Management Division, we found that ship logistics managers and officials of the Office of the Chief of Naval Operations had not worked actively toward system improvements. FMP Management Division officials told us that SAMIS users were solicited for information on their data needs but that very little response was ever received. We believe the primary users placed too much dependence on alternate information systems and too little effort on improving the quality of SAMIS.

In discussing this situation with system users, it was said that data changes could be introduced more rapidly and more accurately into SAMIS by the users themselves by their remote on-line terminals. Several system users told us that they favor updating the system themselves. One official explained that, given permission, he could enter an important program change just minutes after a decision. He added that such a change presently takes days to be entered into SAMIS and that those with a need for this information rely largely on informal communications rather than waiting for the SAMIS data base to be updated. Present policies prevent users from changing the data base. However, we believe users updating information is both feasible and desirable from an operational viewpoint.

In later discussions with Navy officials, they agreed to follow up on our suggestion and pursue the concept of users establishing on-line data changes.

CONCLUSIONS

SAMIS is a data base that shows information on 18,000 programmed alterations. To be effective, the data base must receive valid input information to show accurately the status of the program so that information about scheduling, procuring, costing, etc., can be available. In view of the many alterations that are programmed, it is essential that an automated system be used to help manage these alterations. However, the effectiveness of SAMIS depends on valid inputs. We believe

that the discipline to carryout the system's concept should be improved.

We also believe that the users, especially the submarine and carrier ship logistics managers, have not made a concerted effort to work within SAMIS to improve its operations. Although we do not suggest that the carrier and submarine managers external systems be immediately abolished, we do suggest that improved communications and cooperation between FMP Management Division and SAMIS users would eventually eliminate a need for redundant data systems and improve the economy and efficiency of FMP management.

We believe the Chief of Naval Operations or his designee should take steps to improve the communications and coordination necessary to increase the usefulness of SAMIS. Specifically, we believe systematic procedures and standard format input documents are necessary for accurate interpretations of data. We believe routine data verification is needed to eliminate processing errors and to act as feedback to the data originator.

RECOMMENDATIONS

We recommend that the Secretary of the Navy establish SAMIS as the single-management system and eliminate all duplicative systems.

We recommend further that the Chief of Naval Operations pursue the feasibility of establishing procedures to enable the cognizant parties to introduce changes to the data base using their remote on-line computer terminals, thereby insuring accuracy of the data base and concomitantly achieving savings in the keypunch area.

NAVY COMMENTS

The Navy agreed that SAMIS be established as the unified system within the Navy. A milestone date of December 1976 was established for implementation. The Navy stated that procedures had already been established and program development had begun before our review. In this connection, we noted during our review that SAMIS had been established as the only official Navy system, but the Carrier and Submarine Logistic Divisions were using separate systems and little effort was being made to exclusively use SAMIS.

The Navy also said it was establishing procedures to enable cognizant parties to introduce changes to the SAMIS data base using their remote on-line terminals. July 1976 has been established as the implementation date. The Navy

stated however that the users and data elements would be limited to maintain management control.

CHAPTER 4

NEED TO STABILIZE THE PROGRAM AND TO IMPROVE STANDARDIZATION

The Navy employs a large degree of flexibility in deferring and adding alterations to the program. In the fiscal year 1974 program, about 25 percent of the programmed and funded alterations were deferred. Many alterations are deferred because of changes in ships' overhaul schedules; alterations can be applied only when ships are available. For the ships that were available, however, it appeared that better management could have reduced the amount of alteration deferrals. Maintaining a stable modernization program would help to (1) standardize ships within a common class, (2) use the material procured in support of the alterations, and (3) maintain a level work force and better use of facilities in shipyards.

BETTER MONITORSHIP NEEDED

The Navy lacks information to effectively monitor the execution of FMP. For example, the Navy was unable to explain deferring (adding, canceling, or deferring) alterations in the 1974 program. It was necessary for the Chief of Naval Operations to request an ad hoc ship alteration deferral study to determine the reasons for the number of deferrals in the 1974 program. Even within the framework of the study, justifications for deferring alterations could not always be cited without further research.

Any additions or cancellations to the programmed alterations in the execution year must be approved by the Chief of Naval Operations. The attendant financial matters related to these changes are also handled by the Chief of Naval Operations through an escrow account.

There is no official Navy document that describes the charter of the escrow account. It is used as an informal management device that receives resources from canceled or deferred alterations. The residual resources are then used to finance unbudgeted cost increases, emergent work, or added alterations.

We analyzed the fiscal year 1974 escrow account for reasons why programmed alterations were changed during the execution year. In most cases, the reasons were not clearly stated. The Navy said the escrow account could be used to justify deferring alterations, provided the justifications for changes were clearly defined. The Navy would then be able to compile and organize the data.

To determine the extent that changes were made to FMP, we reviewed 143 ships in the 1974 program which had cost information available at that time. Of the 2,070 alterations that were originally programmed, 1,695 were actually accomplished and 149 unprogramed were added. Actual costs were \$234.1 million as compared with the original \$236.7 million apportionment.

	<u>Number</u>	<u>Amount</u> (millions)
Ships	143	
Programed alterations	2,070	\$ 236.7
Alterations accomplished:		
Original	1,695	\$218.5
Unprogramed added	<u>149</u>	<u>15.6</u>
Actual	1,844	234.1

The residual funds were transferred into the escrow account although the disposition of the funds, according to the Navy, could not be readily tracked. We found that \$2.3 million was transferred to support the ship overhaul program (\$41 million of 1975 escrow account funds were transferred to the 1975 overhaul program).

Because the Navy was unable to determine the justification for making program changes, an ad hoc ship alteration deferral study was conducted to determine the reasons for deferring alterations. The study indicated that from 2,490 programed alterations, 616, or 24.7 percent, were deferred in the 1974 program. Justifications for deferring 235 alterations, or 38 percent of the deferrals, could not be cited by the Navy without further research. Reasons given for deferring alterations were as follows:

	Number of alterations <u>deferred</u>	Percent of all deferrals <u> </u>
Nonavailability of materials	59	9.6
Ship inactivated	29	4.7
Canceled--previously accomplished	45	7.3
Funds transferred to another ship	63	10.2
Rescheduled for future overhaul	95	15.4
Substituted alterations on the same ship	37	6
Inability to develop plans or canceled due to other engineer- ing reasons	13	2.1
Canceled at arrival conference	3	.5
Redesignated as title "D" Alt. (financed by type commander)	24	3.9
Canceled--ship transferred to another class	13	2.1
Unknown	<u>235</u>	<u>38.2</u>
 Total	 <u>616</u>	 <u>100</u>

In the 1973 GAO report "Management of Ship Overhaul and Repair Programs, Fiscal Years 1972 and 1973," it was noted that the Navy was experiencing about a 25 percent deferral rate of programmed alterations. The Navy claimed that this was a normal rate, and this rate enabled them to provide flexibility which was necessary for program execution. We agree that some flexibility is necessary for program execution, but believe it should be possible to avoid some deferrals through improved management. Following is a discussion of two areas where we noted potential for such improvements.

Nonavailability of material

SAMIS data system is responsible for providing material status information to FMP planners. Alterations are not scheduled in the execution year unless the material is on hand or assured of its delivery date. According to the planners, the SAMIS data is unreliable and makes it necessary to conduct manual material status inquiries that are not highly effective. The planners admitted that the process to determine material status is difficult and not completely effective. They use the congressional procurement justification backup sheets as a basis for determining material status. However, the backup sheets do not identify the material specifically assigned to FMP. It is necessary, therefore, to review each alteration and attempt to match it with the material line item. Because the description of the alteration

is very general, determining the associated major and peripheral equipment and its status is difficult. The planners said they only try to match up the major equipment because it is virtually impossible to identify and match up the peripheral equipment. The peripheral equipment, of course, is necessary to accomplish the alteration.

The planners feel that not identifying all the peripheral equipment may contribute largely to alterations being deferred.

Canceled because alterations
were previously installed

This condition is a discipline problem within the Naval Sea Systems Command because the SAMIS data base is not being properly updated to show the status of alterations as reported by the shipyards. Feedback data relative to alteration installations may be derived by departure reports submitted by the shipyards to the Naval Sea Systems Command. Departure reports are prepared after each ship completes its overhaul. The Navy stated that an interface is being developed between SAMIS and the 3M system to automatically capture completion status information. The interface is expected to be operational in the latter part of fiscal year 1976.

NAVY TESTING INTEGRATED ALTERATION
PACKAGE FOR SURFACE SHIPS

Alterations for surface ships are approved individually on the basis of their own merits and not collectively to develop an optimal integrated alteration package for each class of ship. For example, if an antisubmarine warfare sonar is developed, a decision can be made to incorporate it on all antisubmarine warfare type ships. The sonar however is not evaluated against the other programmed alterations to determine its effects on them. Alterations are applied on a piecemeal basis as they become available.

Semiannual fleet modernization conferences are held to select and budget for alterations to be installed in the execution year. Many changes are made at this time--programed alterations may be canceled or deferred; or unprogramed alterations may become programed. These decisions are based upon new priorities, material availability, etc. Lack of standardization results because different alteration packages are being installed for ships within the same class.

In contrast to the surface ship FMP, the submarine fleet maintains a rigid program to establish an optimal integrated alteration package. Because of the space limitations, it is compulsory that an integrated package be developed which

includes not only the installation of the major equipment but also the conjunctive support material. The alterations are incorporated into FMP as integrated packaged. Very few deviations are later made to the package. To illustrate the rigidity of the submarine alteration package, an average of only three alterations deviate from submarines in the same class programed in the fiscal years 1976 and 1977 FMP's. Also, our analysis of the 1974 program showed that only 9.4 percent of the scheduled alterations were deferred as compared to a 22-percent deferral rate for surface ships.

The Navy, recognizing that ship configuration management needed improvement, initiated a study known as "platform management" which is being applied to the 10-year-old DDG-2 (destroyer) class ships. The Navy stated that his study was an attempt to discontinue the trend of (1) approving alterations on an individual basis, and (2) reestablishing priorities and changing alteration packages. The primary objectives of the study are to establish a package that optimizes the ship's performance characteristics and to achieve standardization within the ship's class by installing the best of mix of alterations for every ship. The corollary objectives are to (1) improve training for using the alterations, (2) establish common capabilities, and (3) improve logistical support.

The Navy has not made a firm decision to expand its platform management concept to other classes of ships. If a decision is made to augment the concept, the Navy said the DE 1052 class of ships will be the next selection.

CONCLUSIONS

Weaknesses in the Navy's program monitorship are keeping some programed alterations from being installed. Many of the justifications attributable to the deferrals appear to be correctable, but a concerted effort is not being made to reduce the deferral rate. It is apparent that the Navy needs better data on program execution and why alterations are being deferred. For the last three FMP programs about a 25-percent deferral rate has been sustained. We believe this condition greatly contributes to the lack of standardization.

among surface ships within the same class. Also, because the deferred alterations will not generally be scheduled until the ship's next overhaul availability (about 3 to 4 years) a possibility exists that the material will be obsolete and not applied. This can contribute to the amount of excess inventory.

The Navy is employing a platform management concept to develop an optimal alteration package for the DDG-2 class of ship. We believe this concept is sound and should be expanded immediately to include every class of ship within the active fleet. Platform management will help enable the Navy to standardize common classes of ships and to reduce the deferral rate. The concept is achievable provided stability is maintained in the program.

RECOMMENDATIONS

We recommend that the Chief of Naval Operations obtain information to assist in monitoring the execution of the program. We also recommend that a concerted effort be made to reduce the number of deferrals that are being sustained.

NAVY COMMENTS

The Navy agreed to establish by July 1976 a management information system to assist in monitoring the execution of the FMP program. According to the Navy, this will be accomplished either by (1) programming the existing SAMIS to include reasons why alterations are deferred or (2) establishing a monitoring system through the escrow account by extracting and stratifying the justifications for alteration changes. As of January 1976, no final decisions had been made.

The Navy also agreed to make a concerted effort to reduce the number of ship alteration deferrals by (1) performing earlier alteration planning, and (2) determining more accurate material availability and procurement installation planning. The Navy stated that the majority of ship alteration deferrals result from changes to the overhaul schedule or from providing funding needed for other higher priority requirements, which causes are not likely to lessen. But our 1973 report and the Navy's ship alteration deferral study, showing that an average rate of 25 percent of the alterations are being deferred, did not include those alterations deferred because the ship's overhauls were deferred. We believe that if the Navy effectively carries out their plans alteration deferrals will be reduced.

CHAPTER 5

WORK THAT POTENTIALLY COULD BE PERFORMED AT A LOWER MAINTENANCE LEVEL

Navy shipyards are installing alterations and doing repair work the type that could be done at lower maintenance levels. Navy policy requires that forces afloat and fleet support activities which are manned by Navy personnel do ship maintenance, including installing alterations, to the maximum extent feasible and consistent with the availability of material, funds, and skilled personnel. Execution of this policy has been adversely affected by shortages of resources available to intermediate and organizational-level maintenance activities.

Intermediate-level maintenance is done by ships' tenders, repair ships, fleet support bases and fleet maintenance assistance groups. Work generally consists of the repair or replacement of damaged or unserviceable parts, equipment calibration, and installation of some alterations.

Intermediate maintenance activities include:

1. Afloat-General Purpose and Reserve Forces:
 - Destroyer tenders (9),
 - Submarine tenders (6), and
 - Repair ships (5).
2. Afloat-Strategic Forces:
 - Fleet ballistic missile submarine tenders (5).
3. Ashore-General Purpose and Reserve Forces:
 - Fleet maintenance assistance groups (3,706 personnel assigned to various shore activities).
 - Naval development and training center (1216 personnel).
 - Shore readiness support group, Norfolk, Virginia (132 personnel).
 - Submarine support facility, Groton, Connecticut (177 personnel).

--Submarine Base Pearl, Pearl Harbor, Hawaii
(125 personnel).

--Surface force Atlantic support group, Charleston,
South Carolina (87 personnel).

4. Ashore-Strategic Forces:

--Trident support facility (under construction in
Bangor, Washington).

Organizational level maintenance is normally done by the units or organizations to which military equipment is assigned. Tasks assigned to these equipment users include inspecting, servicing, and lubricating equipment as well as adjusting, removing, and replacing parts, minor assemblies, and subassemblies.

The Navy recognizes that improvements in organizational and intermediate level maintenance are needed. The Chief of Navy Operations in his Policy and Planning Guidance (FY77-81) stated that "* * *Navy's policy of fully funding 'thorough overhauls' did not achieve a significant increase in fleet materiel readiness because parallel improvements at the organizational and intermediate echelons were not achieved * * *"

A large backlog of deferred maintenance exists. The Navy considers the reduction of this backlog to be of primary importance. Expanding the program to install additional alterations at lower maintenance levels will be achieved only when the backlog of deferred maintenance is reduced to a manageable level and a proper amount of skilled personnel and resources becomes available.

LONG BEACH NAVAL SHIPYARD

We requested the type commander for surface ships to review the alterations on six ships that were overhauled in fiscal year 1974, and to identify the alterations that in their opinion could have been done by the forces afloat. We asked them to assume that enough material and skilled personnel would be available. From a total of 207 alterations that were completed on the 6 ships, the type commander identified 22 alterations, or about 10.5 percent, costing about \$692,000 that could have been installed by the lower maintenance level.

SHIP ALTERATION AND REPAIR PACKAGE

Because of the interrelationship between scheduling maintenance repair work and installing alterations at lower maintenance levels, we made an examination of the USS JOUETT (DLG-29) to determine if lower maintenance work was being scheduled into the shipyards. Our review identified the type of work items that could be done by forces afloat. Officials from the type commander and the USS JOUETT concurred on most items.

A ship alteration and repair package (SARP) is prepared for all ships to be repaired and overhauled. The primary purpose of SARP is to identify all of the equipment in need of repair and to estimate the cost of the repair. SARP also systematizes the work items in an effort to ease the planning effort.

For ships entering Navy yards, the shipyard prepares a SARP from the work requests submitted by the ship and from a physical inspection of the ship. Work on SARP is started about 1 year in advance and is completed several months before the scheduled overhaul. SARP determines the work items, the estimated labor and material costs, the priority of the job, and whether the fleet or the shipyard should do the work.

During our review of the USS JOUETT, we noted that the funds approved for the overhaul package were much lower than the amount estimated in SARP. Navy officials stated they have insufficient funds to complete the work outlined on SARP.

The USS JOUETT (DLG-29) was scheduled to enter the Long Beach yard on April 28, 1975, for an 11-month overhaul. At the time of our inspection, it was in port in a preoverhaul condition. The final SARP for the upcoming overhaul had been completed. We, therefore, determined that the JOUETT was an ideal ship for our survey. A summary of the cost estimates in its SARP is shown below.

<u>Work items</u>	<u>Amount</u>
	(millions)
Shipyard	\$ 7
Forces afloat	3.2
Deferred	1.5
Canceled	<u>.8</u>
Total	<u>\$12.5</u>

We limited our survey to the \$7 million worth of work items assigned to the shipyard. Our procedure was to review each work item and determine if it could be done by forces afloat. Each item we identified was discussed with officials from the type commander and the USS JOUETT. Where necessary, a physical inspection was made.

We identified 130 work items estimated at \$1.6 million that we believed could be done by forces afloat. Officials from the type commander and the JOUETT concurred on 103 of these items.

	<u>Number of work items</u>	<u>Staff-days</u>	<u>Cost</u>
Work items identified to be within fleet's capability	90	6,766	\$ 863,526
Work items identified to be within fleet's capability--but difficult	<u>13</u>	<u>2,908</u>	<u>203,810</u>
Total	<u>103</u>	<u>9,674</u>	<u>\$1,067,336</u>

JOUETT officials said that they are responsible for a large part of the workload during the overhaul. They believe they already have all the work that they will be able to do. Although we did not test the ship's planned workload, we tried to determine if it were physically possible to do the work we identified.

	<u>Staff-days</u>
Work items identified during survey	9,674
Work items assigned to forces afloat (\$3.2 million)	<u>19,018</u> <u>28,692</u>
Estimated staff-days during the 11-month period of availability	<u>72,380</u>
Complement of the JOUETT Type Commander estimate of manning level (percent)	387 men <u>85</u> 329
Estimated staff-days per crew member available during the 11-month overhaul	<u>220</u>
Estimated staff-days available	<u>72,380</u>

From a total of 220 staff-days available during the ships overhaul period, each crew member is assigned about 58 staff-days, or 26 percent of his available time, to maintenance. An additional 29 staff-days, or a total of 39 percent of a crew members' available time, would be allocated to maintenance if he were to do the additional work identified in our review. We were told that submarine crew members allocate considerably more time to maintenance. For example, from a complement of 100 crew members, an average of 65 staff-days, or 65 percent of their time, is allocated to maintenance work. It appears that the JOUETT's forces could spend more of their available time doing maintenance work.

ONBOARD EQUIPMENT NOT
ADEQUATELY MAINTAINED

Officials at the Chief of Naval Operations stated that there is a shortage of skilled personnel to adequately maintain the equipment. These same skills are also missing at the intermediate maintenance level.

We reviewed eight board of inspection and survey reports that the Navy randomly selected to determine the impact that inadequate maintenance had on the ship's equipment. The reports are made tri-annually and usually about 6 months before a ship's scheduled overhaul. The report divides equipment deficiencies by those that significantly degrade the ship's ability to carry out assigned general and primary missions and those that have a lesser impact. Listed below is an illustration of a report dated May 13, 1974, on the DLG-32 destroyer describing the major deficiencies.

- Steam at full power is degraded by a permanently deformed partially collapsed DA tank in No. 1 fireroom.
- Excessive errors in MK-19 gyros.
- AN/SPS-40C air search radar is inoperative.
- Low sensitivity of the AN/WLR-1C ESM review.
- AN/SLJ-26 V8 (anti-air warfare radar) is inoperative.
- High frequency transmitter degraded by four inoperative pieces of equipment.
- Communications degraded by secure electrical information processing systems having multiple teletype and terminal equipment deficiencies.

- Communications degraded by four inoperative UHF transceivers, and low power output for most of the UHF transceivers.
- Anti-air warfare degraded by both LINK four transceivers being inoperative.
- Antisubmarine warfare degraded by AN/URN-20 TACAN being inoperative.
- Antisubmarine warfare degraded by AN/SQS-26 BX sonar having low source levels and low sensitivity.
- Anti-air warfare affected by degraded missile capability.
- Anti-air warfare degraded by inoperative 5"/54 gun mount.

According to the Navy, mission essential equipment, as mentioned above, should be currently maintained by the ship's forces or intermediate levels to maintain the ship's readiness. Deferring maintenance until the ship is scheduled for overhaul is not an acceptable solution. The major problems contributing to this condition include:

- High tempo of operations during the Viet Nam conflict creating large backlogs of deferred maintenance.
- Shortage of skilled personnel.
- Complexity of shipboard equipment.

The Navy states that the ships' force level skills are demonstrably low, and they are faced with a situation of increasing equipment complexity and decreasing personnel capability.

PLANS TO IMPROVE
INTERMEDIATE MAINTENANCE SUPPORT

The Navy claims that the current influx of personnel assigned to the intermediate maintenance levels are not adequately trained, and their low level of training is reflected in the low level of productivity found at intermediate maintenance activities.

The Navy has embarked on a program to modernize its intermediate-maintenance activities and increase productivity. The Secretary of Defense has directed the Navy to insert

investment and operating funds in fiscal year 1977 for Navy surface intermediate maintenance activity improvement programs. The following table shows the Navy's planned program in Program Objective Memorandum 1977 to improve the intermediate maintenance resources:

	Fiscal year				
	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
	(millions)				
Plant equipment and facilities	\$ 3.6	\$15.6	\$45.8	\$44.7	\$25.1
Project engineering and management	1.5	2.5	4.7	4.3	2.8
Tender upgrade	2.5	1.9	9.5	12.2	2.9
Incremental civilian personnel	-	-	.4	1.7	2.9
Shop and personnel qualifications improvement	<u>1.6</u>	<u>3</u>	<u>4.4</u>	<u>4.4</u>	<u>4.4</u>
	<u>\$ 9.2</u>	<u>\$23</u>	<u>\$64.8</u>	<u>\$67.3</u>	<u>\$38.1</u>

Improvements to the ashore maintenance facilities will be a plant modernization program of existing buildings with very little new construction. The tender upgrade calls for improving two destroyer tenders and four repair ships. The improvements will extend these ships into the 1980s and are primarily for space and layout improvements, new test equipment, and certain management and technical improvements. The destroyer tenders will each be allocated about \$11 million for improvements; the repair ships will each receive a \$3.1 million upgrade.

The amount of expenditures projected for ship and personnel improvements includes a program that will provide teams of contractor maintenance technicians who will analyze shop personnel, procedures, and training. The contractor teams will make visits to the intermediate maintenance activities at about 2-year intervals. The first team will begin operations in fiscal year 1976 and teams will be added in each of fiscal years 1977 to 79. Each team will have 15 engineers (2 for each major maintenance shop group plus 1 supervisor).

The fleet maintenance assistance group program was established to improve sea/shore rotation patterns for critical craftsman ratings and to provide direct maintenance assistance to operating forces. In fiscal years 1973 to 1974, 7,000 new shore duty billets were established for the groups. Subsequent reductions in sea duty billet requirements in fiscal year 1975 reduced billets to 4,320. The program developed a system of shore-based maintenance activities but lacked skilled personnel. Productivity continues to be inhibited by the improper skill mix in the program.

The Navy's solution is to cross train personnel for needed skills as they enter the program. One-quarter of a person's tour in a shore intermediate maintenance activity will be devoted to training. In the planned 3-year sea/shore rotation scheme, 9 months will be devoted to training. The objective is to achieve a mix of skills comparable to those found afloat in a tender or repair ship.

In a fiscal year 1976 guidance memorandum, the Secretary of Defense directed the Navy to develop an "* * *integrated, engineered ship maintenance strategy." The Chief of Naval Operations has established an objective--improvement of material conditions in the fleet--to review fleetwide material conditions. A "Red E" project was developed to address the objective and is the Navy's main, long-term program. The project is an engineering and management analysis program scheduled for fiscal years 1976 through 1980. About \$45 million has been allocated to the program. It is designed to improve all aspects of maintenance from requirements definition to facilities improvement with a goal of an integrated maintenance strategy. The Director, Ship Material Readiness Division, Office of the Chief of Naval Operations, is the executive agent of the project. Project Red E review is to recommend certain adjustments to integrate and re-engineer the maintenance requirements for depot, intermediate, and organizational maintenance echelons to improve readiness at an acceptable cost.

In January 1975 the Commander in Chief, Atlantic Fleet, embarked on a program to do more work at the lower maintenance levels. Each quarter the ships reserve 21 days for maintenance work with their own forces. Every 6 months a 4-week period will be reserved at the intermediate maintenance level to do more work. This program has been emphasized by the Chief of Naval Operations. The objective of the program is to reduce the amount of deferred maintenance. The Navy was unable to quantify the magnitude of deferred maintenance outstanding.

CONCLUSIONS

Alterations are being programmed for shipyard installation that could be done at a lower maintenance level provided enough skilled personnel were available. The Navy's maintenance program does not properly define at what levels alterations and maintenance work can be accomplished. Personnel skills at the organizational and intermediate levels have not maintained currency with technological improvements. Equipment is not being adequately maintained, resulting in a lower readiness posture. The installation of alterations and repair work that potentially can be done at a lower maintenance level is being deferred to the ship's overhaul date.

It appears that the Navy is taking steps in the right direction: (1) resources are being directed to augment the intermediate maintenance activities, (2) a fleet maintenance assistance groups program have been introduced to improve personnel skills, (3) project Red E has been established to integrate maintenance echelon mix to improve material conditions of the fleet, and (4) organizational and intermediate work teams have been reserved for ships to do maintenance work. Although this last step is not a new concept, it has the strong interest and support of the Chief of Naval Operations.

We believe that additional maintenance work could be performed by surface fleet crew-members while the ship is in overhaul.

Because overhauls will be extended for longer cycles and ships and their equipments are becoming more complex, greater demands will be placed on the organizational and intermediate levels of maintenance. It is essential that the Navy make every effort to expand and improve these maintenance levels.

RECOMMENDATIONS

We recommend that the Chief of Naval Operations closely monitor the various projects that are designed to improve effectiveness of the lower level maintenance activities. Also, consideration should be given to the following alternatives.

- Providing strong incentives to increase the number of personnel in the scarce skills.
- Employ skilled civilian personnel at the intermediate maintenance levels for those positions that cannot be filled by Navy personnel.

--Increase productivity of maintenance personnel and the time allocated to maintenance during overhaul.

NAVY COMMENTS

The Navy agreed to monitor closely the various projects that are designed to improve effectiveness of the lower level maintenance activities. The Navy concurred in the need for providing strong incentives to increase the number of personnel in scarce skills. They stated that their present efforts include improving habitability, overhauls near homeports, and reduced watchstanding requirements in port. Greater returns are expected, however, from improvements in pay and fringe benefits.

The Navy did not feel civilian personnel should be employed at the intermediate maintenance level to provide those skills that cannot be filled by Navy personnel. The Navy stated that Navy personnel shortages exist at intermediate maintenance levels while shortages in equivalent civilian trades are experienced at depot activities. The Navy states there is no reason to believe that it would more cost effective to use civilian personnel at the intermediate level if enough skilled personnel could be found. To employ civilians at the intermediate level would aggravate the shipyard manning problem.

We are currently surveying the Navy's intermediate level maintenance of ships and will address this area in more detail.



DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20350

30 DEC 1975

Mr. Fred J. Shafer
Director, Logistics and
Communications Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Shafer:

This is in response to your letter of September 18, 1975, to the Secretary of Defense which forwarded your draft report to the Congress entitled, "Improvements Needed in the Navy's Fleet Modernization Program," (OSD Case #4171).

The report is fundamentally accurate. Both the Offices of the Secretary of Defense and the Navy have been concerned with the need for improved configuration control of naval ships, improved planning of fleet modernization and matching material procurements with planned installations. We agree that the deferral of ship alterations after the equipment to be installed has been procured is to be avoided. However, it is noted that this situation has in some instances been caused by the necessity to offset inflation which we have not been permitted to provide for in our budget submission. The FY76 Senate Appropriations Committee Report addresses this problem.

We concur with ten of the twelve recommendations in the draft report. Enclosure (1) responds to specific recommendations in the draft report. Enclosure (2) is a list of milestone dates by which corrective action is planned to be completed.

[See GAO note, p. 38.]

Sincerely,

PETER W. McDEVITT

Enclosures:

- (1) Navy Responses to GAO Specific Recommendations on the
- (2) Plan of Actions and Milestones, Assistant Secretary of the Navy
- (3) Shoreside Facilities for Navy Ships (Washington and Logistics)



NAVY RESPONSES TO GAO SPECIFIC RECOMMENDATIONS

1. GAO Recommendation: (p. 20) Develop and submit budget backup data which would relate the planned installations to the annual procurement request.

Navy Response: Concur.

2. GAO Recommendation: (p. 20) Establish control over inventory on hand and relate the inventory to the alterations to be accomplished thereby forming a basis for future alteration scheduling and additional procurements.

Navy Response: Concur, but with recognition that in some infrequent instances urgent emergent requirements may supersede the installation of other alterations previously procured.

3. GAO Recommendation: (p. 20) CNO assure that shipyards are complying with established procedures to return to the supply system inventory excess to their needs.

Navy Response: Concur.

4. GAO Recommendation: (p. 30) Establish SAMIS as the unified system within the Navy and eliminate other duplicate systems.

Navy Response: Concur, action previously initiated.

5. GAO Recommendation: (p. 30) Establish procedures to enable cognizant parties to introduce changes to the SAMIS data base using their remote on-line terminals.

Navy Response: Concur. Feasibility has been established and program development has commenced. However, users and data elements will be limited for necessary management control.

6. GAO Recommendation: (p. 39) Establish a management information system to assist in monitoring execution of the program.

Navy Response: Concur.

7. GAO Recommendation: (p. 39) Make a concerted effort to reduce the number of ship alteration deferrals.

Navy Response: Concur. Some improvement can be achieved through earlier alteration planning, more accurate determination of material availability, and procurement-installation planning. However, the majority of deferrals result from changes to the overhaul schedule or to provide funding compensation for other higher priority requirements, which causes are not likely to lessen significantly.

Enclosure (1)

8. GAO Recommendation: (p. 51) CNO monitor closely the various projects that are designed to improve effectiveness of the lower level maintenance activities.

Navy Response: Concur.

9. GAO Recommendation: (p. 51) Provide strong incentives to augment the number of personnel in scarce skills.

Navy Response: Concur. Ongoing efforts currently include improving habitability, overhauls near homeports, and reduced watchstanding requirements in port. Greater return is expected from improvements in pay and fringe benefits. Existing programs to improve retention include career counseling, Variable Reenlistment Bonus, and Selective Training and Reenlistment Program.

10. GAO Recommendation: (p. 51) Employ civilian personnel at the intermediate maintenance level for those skills that cannot be filled by Navy personnel.

Navy Response: Do not concur. Navy personnel shortages exist at IMA's while shortages in equivalent civilian trades are experienced at depot activities. Accordingly, employing civilians at IMA's (which would require a policy change) would only aggravate the shipyard manning problem without overall gain in fleet maintenance and modernization.

11. GAO Recommendation: (p. 51) Increase productivity and time allocated to maintenance by surface ships maintenance personnel during a ship's overhaul.

Navy Response: Concur with increase in productivity. This continues to be one of the goals of the overall maintenance strategy which incorporates improved management tools into normal ship routine. Other efforts are emerging as a result of CNO's objective to improve the material readiness of the fleet. The apparent difference in productive work between surface ships and others is not real and is attributed to the manner in which the several computations are made.

[See GAO note.]

GAO note: Deleted comments pertain to matters which were presented in the draft report but are not included in this final report.

PLAN OF ACTIONS AND MILESTONES
GAO REPORT ACTIONS

<u>ACTION</u>	<u>MILESTONE</u>
1. Budget backup data relate planned installations to annual procurement request	July, 1976
2. Relate inventory to alterations to be accomplished	July, 1976
3. Ensure that shipyards are complying with established procedures to return excess inventory	Jan 76, then continuing
4. Establish SAMIS as single system and eliminate duplicate systems	Dec, 1976
5. Commence on-line SAMIS change entries by cognizant offices	July, 1976
6. Establish management information system for monitoring execution of FMP	July, 1976
7. Reduce ship alteration deferrals	Continuing
8. Monitor projects designed to improve effectiveness of lower level maintenance activities	Continuing
9. Provide strong incentives to augment the number of personnel in scarce skills	Continuing
10. Increase productivity of ships maintenance personnel	Continuing

Enclosure (2)

PRINCIPAL OFFICIALS OF
THE DEPARTMENT OF THE NAVY
RESPONSIBLE FOR THE ACTIVITIES
DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
<u>DEPARTMENT OF THE NAVY</u>		
SECRETARY OF THE NAVY:		
J. William Middendorf	June 1974	Present
J. William Middendorf (acting)	Apr. 1974	June 1974
John W. Warner (acting)	May 1972	Apr. 1974
UNDER SECRETARY OF THE NAVY:		
David S. Potter	Aug. 1974	Present
Vacant	June 1974	Aug. 1974
J. William Middendorf	June 1973	June 1974
CHIEF OF NAVAL OPERATIONS:		
Admiral James L. Holloway III	June 1974	Present
DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS):		
VADM. E. W. Cooke	Aug. 1975	Present
VADM. W. D. Gaddis	Apr. 1973	Aug. 1975
MATERIEL READINESS DIVISION:		
RADM. C. R. Bryan	Sept. 1974	Present

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